

**Preliminary Data Report for Stormwater Runoff Samples Collected in Cañada del Buey at TA-54
MDA L (E223) on October 7, 2000**

A precipitation event occurred over the Jemez Mountains and the Pajarito Plateau on the evening of October 07, 2000. The meteorological stations across the plateau recorded a total of 0.33 to 0.37 inches for the day. Pajarito Mountain recorded a total of 0.37 inches, the TA-6 station recorded 0.33 inches, and the TA-54 station recorded 0.37 inches. Remote Automated Weather Stations (RAWS) located on US Forest Service land in the Jemez Mountains recorded 0.26 inches near Garcia Canyon, 0.27 inches in Pueblo Canyon, 0.43 inches in upper Los Alamos Canyon and 0.34 inches in Pajarito Canyon. Figure 1 shows the pattern of precipitation that was recorded in the Jemez Mountains and on the Pajarito Plateau on October 7.

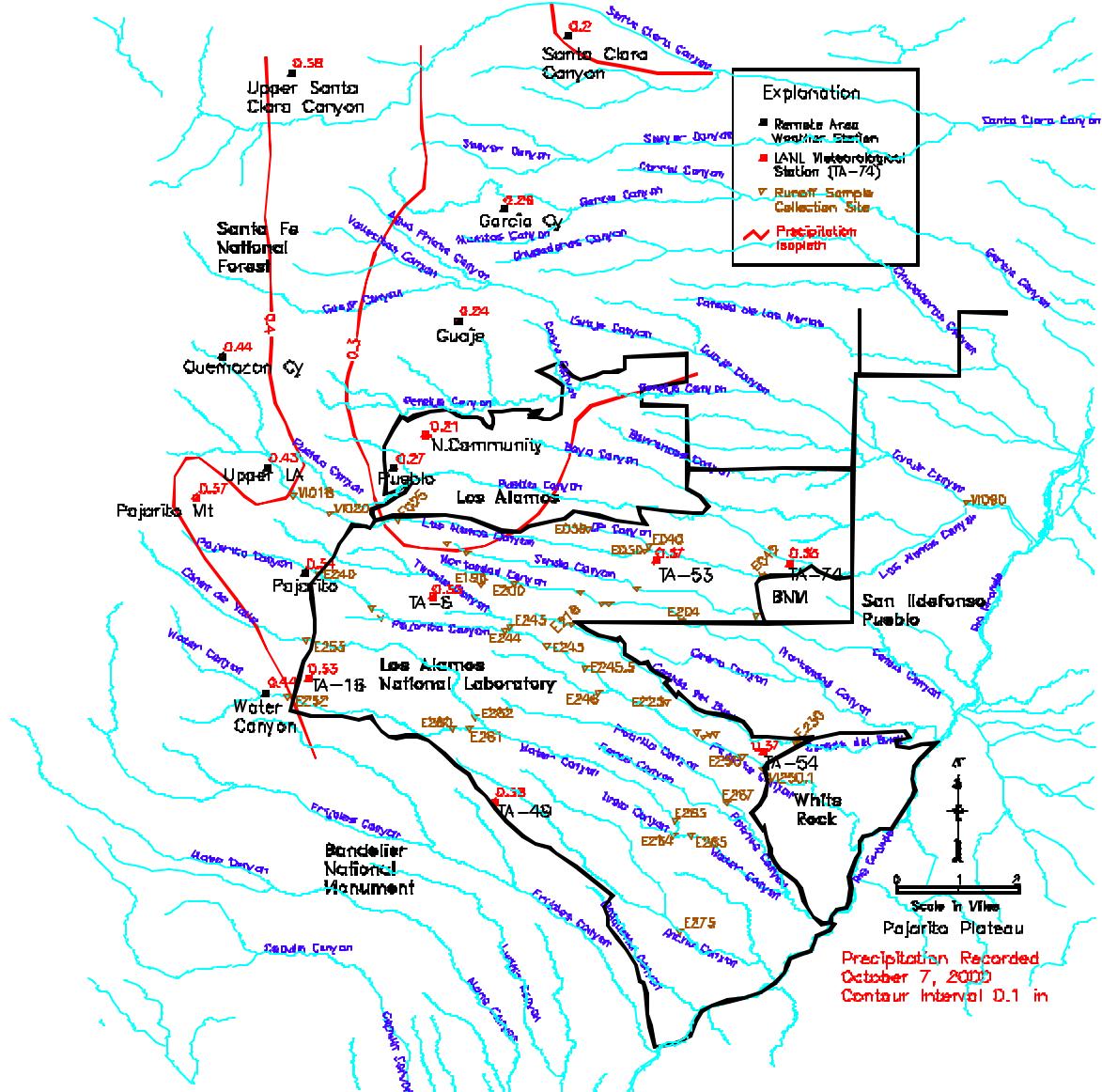


Figure 1. Precipitation recorded at meteorological stations on the Pajarito Plateau on October 07, 2000

During the precipitation event, stormwater runoff samples were collected in Cañada del Buey at the TA-54 MDA L gaging station E226. Automated samples were collected at 17:50 and 17:53 hours during the evening of October 7. Unfiltered samples were collected for analysis. The first samples collected were sent to General Engineering Laboratories, Inc. in Charleston, South Carolina for analysis for radionuclides, metals, general inorganic constituents, and for PCBs. The second sample collected at 17:53 remained unfiltered for the analysis of total suspended sediment (TSS). Filtered samples were not collected.

Preliminary results of the available analyses for radionuclides are shown in Table 1. Also shown on Table 1 are the maximum values of constituents that have been recorded previous to the Cerro Grande Fire in unfiltered stormwater runoff at LANL (1995 through 1999), the DOE Public Dose Derived Concentration Guides (DCGs), and the available Environmental Restoration Project's Ecological Screening Level (ESL) for water, for comparison purposes. Results of gamma spectroscopy are reported only for Am-241, Cs-137, and other radionuclides that were detected in concentrations above the laboratory method detection limit. A summary of the preliminary results of the analyses is shown in Figure 2. The results are compared with the historic maximum values obtained for unfiltered runoff and the DOE DCGs and the ESLs.

The radionuclide results obtained to date for the unfiltered samples collected from Cañada del Buey at E223 on October 7 are below the historic pre-fire maximum values. The results are below DOE DCG and ESL values for each analyte result obtained to date.

The unfiltered runoff sample collected at E223 on October 7, 2000 at 17:50 contained 33.3 mg/L total suspended solids (TSS). Based on this sediment concentration and the activity of radionuclides measured of the unfiltered water and the filtered water samples, the concentrations of the radionuclides in the suspended sediment fraction of the runoff samples were calculated. These calculated values are also shown on Table 1 and the data are summarized in the Figure 3. Values for radionuclides that were reported below the method detection limits are not shown on the figure for calculated suspended sediment comparisons.

The background values (BVs) that have been determined for stream sediments at Los Alamos National Laboratory (Ryti et al. 1998) and the calculated residential screening level (RSL) or soil for each radionuclide are also shown on Table 1. The RSL values were derived using DOE's RESRAD code and are based on a dose limit of 10 mrem/yr, which is less than the DOE free-release dose limit of 15 mrem/yr (LANL 2000). The maximum value of radionuclide concentrations observed in ash and muck sediment samples collected in June after precipitation events by the LANL ER Project are also shown on Table 1 (LANL 2000). The BVs for stream sediments, the RSLs, and the maximum ash and muck values are provided as a comparison for the results of the calculated activities of radionuclides in the suspended sediment fraction of the runoff samples. Suspended sediments in runoff samples are typically finer-grained than stream sediment samples; some radionuclides have been found to be preferentially located in finer grained sediments so direct comparison of the suspended sediment fraction of runoff samples with stream sediment BVs may not be appropriate, however the BVs, RSLs, and maximum values of ash and muck samples are provided here for reference and comparison.

The calculated radionuclide concentrations in the suspended sediment fraction of the samples are above the stream sediment BVs for Am-241, Cs-137, Gross Alpha, Gross Beta, Pu-238, Ra-228, and Th-230. The calculated concentrations of Th-230 and Th-232 are above their respective RSLs. The calculated concentrations of Am-241, Pu-238, and Th-230 are above the ER ash and muck maximum values.

References

Los Alamos National Laboratory (LANL), 2000, "Post-Cerro Grande Fire Environmental Sampling Data: Baseline Ash and Muck Samples," Environmental Restoration (ER) Project report LA-UR 00-4362, September 2000, ER2000-0485. Preliminary data also presented on LANL ER Web site located at <http://erproject.lanl.gov/Fire/Data/datahome.html>

Ryti, R. T., P. A. Longmire, D. E. Broxton, S. L. Reneau, and E. V. McDonald, September 1998,
"Inorganic and Radionuclide Background Data for Soils, Sediments and Bandelier Tuff at Los Alamos
National Laboratory," Los Alamos National Laboratory Report LA-UR-98-4847. (Ryti et al. 1998, 59730)

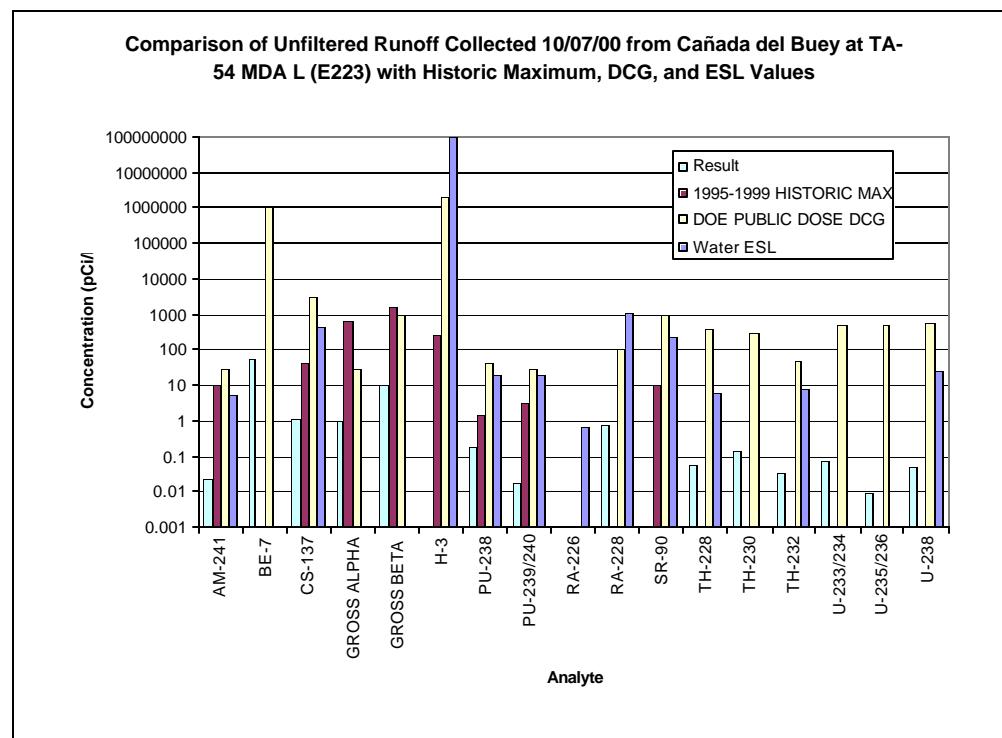


Figure 2. Comparison of runoff samples collected 10/07/00 in Cañada del Buey at TA-54 MDA L (E223) with Historic Maximum, DCG Values, and Ecological Screening Levels

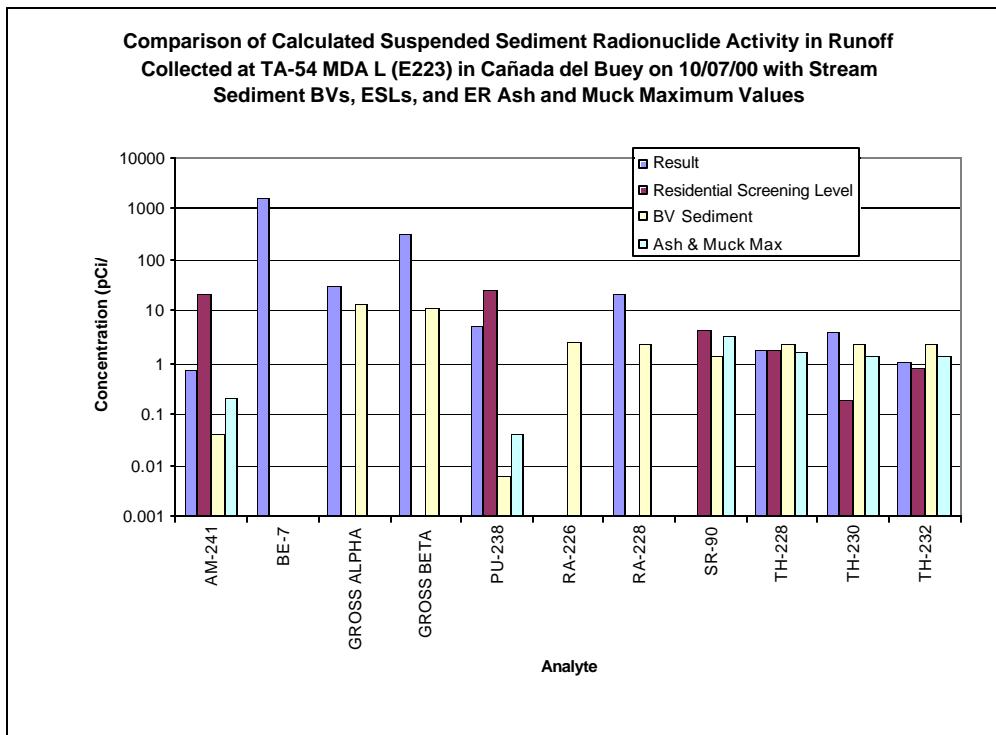


Figure 3. Comparison of calculated radionuclide activity in suspended sediment fraction of runoff samples with residential screening levels, stream sediment BVs, and ER ash and muck maximum values obtained after the Cerro Grande Fire.

Table 1

RADIOACTIVE SCREENING MEASUREMENTS IN MORTANDAD CANYON AT TA-54 MDA L, GAGE E223 ON OCTOBER 7, 2000
DRAFT: DATA ARE PRELIMINARY

Canyon	Gage	Location	Sample ID	Lab Sample ID	Collection Date	F/UF	Collection Method	Sample Type	Analyte	Result	Units	TPU	DL	METHOD	QUALIFIER	COMMENT	1995-1999 HISTORIC MAX	DOE PUBLIC DOSE DCG	Water ESL		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	AM-241	0.0237	pCi/L	0.01	0.0107	ALPHA SPEC			10.288	30	5.8		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	7-Oct-00	UF	A	SAMPLE	AM-241	1.68	pCi/L	5.71	14.9	GAMMA SPEC	U	CHECK DL, BAD FAX	10.288	30	5.8		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	7-Oct-00	UF	A	SAMPLE	BE-7	52.8	pCi/L	10.6	19.1	GAMMA SPEC					1000000		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	7-Oct-00	UF	A	SAMPLE	CS-137	1.12	pCi/L	1.61	2.21	GAMMA SPEC	U		42.28	3000	470		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	7-Oct-00	UF	A	SAMPLE	GROSS ALPHA	0.993	pCi/L	0.36	0.974	GFPC			640.8	30			
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	7-Oct-00	UF	A	SAMPLE	GROSS BETA	10.8	pCi/L	1.1	2.05	GFPC			1637	1000			
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	7-Oct-00	UF	A	SAMPLE	H-3	-79.1	pCi/L	51.3	175	LS			281	2000000	1E+08		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	PU-238	0.173	pCi/L	0.03	0.0309	ALPHA SPEC			1.5308	40	19		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	PU-239/240	0.0166	pCi/L	0.01	0.0245	ALPHA SPEC	U		3.282	30	20		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	RA-226	-0.051	pCi/L	0.17	0.721	LC					0.68		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	RA-228	0.756	pCi/L	0.45	1.56	GFPC			100	1100			
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	SR-90	-0.038	pCi/L	0.1	0.335	GFPC			10.312	1000	230		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	TH-228	0.0565	pCi/L	0.01	0.0231	ALPHA SPEC					400	5.9	
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	TH-230	0.129	pCi/L	0.02	0.0226	ALPHA SPEC					300		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	TH-232	0.0338	pCi/L	0.01	0.0286	ALPHA SPEC					50	7.9	
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	U-233/234	0.0772	pCi/L	0.03	0.0897	ALPHA SPEC	U				500		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	U-235/236	0.0097	pCi/L	0.01	0.0263	ALPHA SPEC	U				500		
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	7-Oct-00	UF	A	SAMPLE	U-238	0.0482	pCi/L	0.02	0.0897	ALPHA SPEC	U				600	25	
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32641006	7-Oct-00	UF	A	SAMPLE	NH3-N	0.47	mg/L		0.029	EPA 350.1							
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32641006	7-Oct-00	UF	A	SAMPLE	NO3/NO2-N	0.81	mg/L		0.009	EPA 353.3							
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32641006	7-Oct-00	UF	A	SAMPLE	PO4-P	0.1	mg/L		0.02	EPA 365.4							
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32641006	7-Oct-00	UF	A	SAMPLE	SP COND	33.8	uS/cm		1	EPA 120.1							
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32641006	7-Oct-00	UF	A	SAMPLE	TDS	18	mg/L		6.29	EPA 160.1	AVERAGE OF 2						
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32641006	7-Oct-00	UF	A	SAMPLE	TKN	0.91	mg/L		0.071	TRAACS							
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649003	7-Oct-00	UF	A	SAMPLE	TSS	33.3	mg/L		5.83	EPA 160.2	J	AVERAGE OF 2					
Cañada del Buey	E223	TA-54 MDA L	GS00102E223	32649004	7-Oct-00	UF	A	SAMPLE	TSS	82.5	mg/L		3.5	EPA 160.2	AVERAGE OF 2						

Calculated Suspended Sediment Concentrations of Radionuclides

Canyon	Gage	Location	Sample ID	Lab Sample ID	Collection Date	F/UF	Collection Method	Sample Type	Analyte	Result	Units	TPU		METHOD	QUALIFIER	COMMENT	Residential Screening Level	BV Sediment	Ash & Muck Max
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	AM-241	0.7117	pCi/g	0.29		ALPHA SPEC			22	0.04	0.203
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	36806	UF	A	Calculated	BE-7	1585.6	pCi/g	318		GAMMA SPEC					
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	36806	UF	A	Calculated	CS-137	33.634	pCi/g	48.3		GAMMA SPEC	U		5.1	0.9	5.16
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	36806	UF	A	Calculated	GROSS ALPHA	29.82	pCi/g	10.8		GFPC					14.8
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32649006	36806	UF	A	Calculated	GROSS BETA	324.32	pCi/g	33		GFPC					12
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	PU-238	5.1952	pCi/g	1.04		ALPHA SPEC			27	0.006	0.042
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	PU-239/240	0.4985	pCi/g	0.27		ALPHA SPEC	U		24	0.068	0.7
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	RA-226	-1.535	pCi/g	4.98		LC					2.59
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	RA-228	22.703	pCi/g	13.4		GFPC					2.33
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	SR-90	-1.15	pCi/g	2.94		GFPC			4.4	1.3	3.48
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	TH-228	1.6967	pCi/g	0.43		ALPHA SPEC			1.7	2.28	1.66
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	TH-230	3.8739	pCi/g	0.65		ALPHA SPEC			0.18	2.29	1.32
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	TH-232	1.015	pCi/g	0.36		ALPHA SPEC			0.77	2.33	1.29
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	U-233/234	2.3183	pCi/g	0.91		ALPHA SPEC	U		13	2.59	1.82
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	U-235/236	0.291	pCi/g	0.29		ALPHA SPEC	U		10	0.2	0.178
Cañada del Buey	E223	TA-54 MDA L	GS00101E223	32640002	36806	UF	A	Calculated	U-238	1.4474	pCi/g	0.75		ALPHA SPEC	U		67	2.29	2.74

A or M: Automated or Manual (Grab) Sample

F/UF: filtered/unfiltered

Uncert.: 1 Stand. Dev. uncertainty in result

MDA or MDC: analytical method detection limit

TPU: Total Propogated Uncertainty

DUP: Laboratory Duplicate

DL = Detection Limit

RL = Reporting Limit

DCG = Derived Concentration Guide

ESL = Ecological Screening Level

RSL = Residential Screening Level. for soil based on RESRAD code using 10 mrem/yr

BV = Background Value (95/95 UTL)

